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ANNUAL TECHNICAL REPORT NO. 2

ONR Contract N5 ori - 07646

Laboratory of Social Relations

Harvard, University

March 1, 1953.

Introduction.

The present account, the Second Annual Report of the Project on Interpersonal Dynamics carried out under Contract N5ori-07646 with the Laboratory of Social Relations, covers our first full year of operations. The First Annual Report, written after a few months of research activity, was essentially a programmatic statement.

Several general remarks are worth making by way of introduction. The various research studies reported in this Report — some in progress, some nearing completion, some being prepared for publication — represent not an integrated attack on a single specific hypothesis, but rather a series of related, exploratory research studies. The theme that runs through them all is "How do people of various characteristics perceive other people and what determines the organization of their perceptions?" We have attacked the problem from different vantage points and by the use of diverse techniques. It is our conviction that such exploration is needed if an adequate method is to be found for studying the critical problems of interpersonal perception.

Because of the diverse approaches employed, many of the studies reported in these pages have a strongly methodological cast. Thus, we have been much concerned, in attempting to develop the techniques described in the Report as Relational Analysis and Salzburg Relational Analysis, to find adequate measurement models by which it might be possible to assess how accurately people are able to perceive preferences and aversions of other people. In order to do this, it has been necessary to determine how accurate one might be expected to be, operating entirely on chance. This quest has involved us in collaborative work with a mathematician and a mathematical statistician. Much of what has emerged has been of use to us, but our problems are far from solved. There remains the specifically psychological problem of finding a mathematical model whose assumptions fulfill the conditions of our experimental techniques. Such methodological studies have been carried out in the course of substantive studies, reported in the body of the Report.

Several studies have already been brought to completion, but on the whole, we are still very much "in progress." We have been encouraged to continue in this way (rather than to bring studies to a quick completion after obtaining first results) by a two-year continuation grant from the Office of Naval Research.

The work of the Project has been carried out by various investigators, and those are named in connection with each of the studios cited or described. The Principal Investigator, on leave of absence last year, is now back at Harvard and working closely with the Project. Among those who have been engaged in work relating to the various experiments and studios cited are:

Dr. Jerome S. Bruner
Dr. Henry W. Rocken
Dr. Renato Tagiuri
Dr. Gardner Lindsey
Dr. Frederick Mosteller
Dr. Duncan Luce (M.I.T.)
Mr. Edward E. Jones
Mr. Louis Long
Miss Mary Resoberough
Miss Alice Edgo

Our research has been vastly facilitated by the whole-hearted co-operation of Commander George Sotos, and Lieutenant J.M. Johnson of the Bainbridge Naval Training Station, Maryland; Commanders Alto Clark and Daniel Harris of the CIC School, Boston Naval Training Station, Massachusetts, and Messrs. E. B. Wilson and Robert J. Borgman of the Office of Naval Research, Boston branch. To these gentlemen we extend our sincere thanks.

It is our plan to continue working on the pattern of "related research studios" rather than choosing a specific hypothesis and a specific technique for testing it and putting all our efforts into it. We believe that such a focussing would, at this time, be premature.

II. Relational Analysis Technique

In our Annual Technical Report No. 1 we described briefly a method for collecting data on interpersonal relations and their perception, and for classifying the data in terms of the dyadic relations observed. A full description of this technique appeared in a paper by Tagiuri in SOCIOOMETRY, XV, Nos. 1-2, 1952. Work during the contract year on this phase of our research was focussed on (a) specific technical problems related to this procedure, (b) applications of it, and (c) extensions.

In the Relational Analysis procedure each member of a group is asked to express his preferences and dislikes of the other members, as well as his guesses about who will choose and reject him. The number of such responses a subject may make is left unrestricted. This method yields directly a classification of the relationship existing between two members in terms of affect and perception of affect. For instance, the relationship between S and O can take (among others) the following forms:

S → O S ... → O

Legend

S → O S ... → O

- choice
- rejection
- perception of choice
("guess")
- perception of rejection

There are in all forty-five such combinations and these constitute an inclusive classification of all the possibilities.

A. Specific technical problems related to Relational Analysis procedure

1. Dyad-frequency expectancy (Tagiuri and Luce)

The problem. A central problem in Relational Analysis concerns the frequency with which specific types of dyad would occur by chance in a group, under given conditions of choice, rejection, perception of choice and perception of rejection. Without a chance baseline, it is difficult to say whether a group shows "many" or "few" instances of a certain kind of dyad. The determination of chance expectancy is also essential to the solution of problems such as the determination of "accuracy of perception," the demarcation of sub-group boundaries in terms of relationships, and in general it is propadoutic to the study of the dynamics of interpersonal relationships, in terms of this particular method.

Two of the possible ways of determining the expected incidence of dyads have been used.

The Monte Carlo Method. The most simple minded method is to construct distribution of dyads from tables to random numbers where each hypothetical subject is matched to an actual subject and required to make the same number of choices and guesses as the actual subject, except that the hypothetical subject chooses and guesses at random. The chief drawback of this approach is that a great number of sets of

Monte Carlo data have to be constructed before reliable estimates of chance expectancies can be reached. It is a time consuming and inelegant procedure.

Rational Method. A more rational approach is possible through probability theory and combinatorial mathematics. With the assistance of Dr. Duncan Luce of M.I.T. it has been possible to arrive at formulae with which the expected values and their variance can be computed directly. The method, while still cumbersome computationally, yields precise estimates of expectancies in a shorter time than would be required to obtain comparable precision with the Monte Carlo method.

Details of this procedure are not reported here because of space limitations, but will appear, with an empirical application, in a technical report to be issued in the near future.

Both the Monte Carlo and the Rational approaches require the experimenter to make certain assumptions about the frequency of choosing and guessing in the group. He may, for example, make the assumption that all members of the group make as many choices and guesses as the average for the group or he may take into consideration the fact that subjects differ in this respect. Predictions of chance expectancy will differ depending upon these considerations. This problem, of course, would not exist if the number of responses in the procedure were fixed by the experimenter, but in that case important losses of information would occur. Whether free or restricted numbers of choices and guesses should be employed depends mostly upon the type of problem under investigation. For most of our work unrestricted responses are preferable, since we place our emphasis upon the individual's relationships with the other members of the group, rather than upon the extent to which he chose, omitted and rejected in comparison with the other group members.

2. Application of matching theorems to the problem of accuracy of perception of feelings. (Tagiuri and Mosteller)

A particularly important form of the general problem of the chance incidence of specific relationship types is the question of how accurate individuals are in perceiving who will choose and reject them.

Since the actual number of choices and rejections received by each subject is known, his guesses can be conceptualized as attempts at identifying those responses. One might think abstractly of attempting to match one deck of cards with a second deck and use this as a basis for estimating chance hits. Techniques for estimating the expected number of matches or coincidences and their variance are well known. An application of such matching theorems to the problem of accuracy has been worked out with the aid of Professor Frederick Mosteller.

In estimating the number of people who choose him, however, a subject has to consider both the volume of choices he receives

and names the specific people who choose him. The matching solution, in its present form, considers only the accuracy in identifying specific people who choose a subject. This unfortunately gives an incomplete picture of the situation, since it does not take into consideration the subject's skill in estimating the volumen of his affective income.

According to the matching model, an independence of relation is assumed between the number of members of a suit that turns up in one deck and the numbers in the matching deck. One asks, simply, what chance hits can be expected given a certain number of cards of a given suit in one deck and a certain number in the second deck. If the first deck is composed of 13 spades and a run of the second deck produces 13 spades, the chance level of a hit in this run is 13/13 or 100% "accuracy" by chance.

Compare now the case of our subjects. A subject must judge who likes him, who ignores him, or who dislikes him. If it happens that he is disliked by all 13 members of a group and if our subject is perceptive enough to recognize this (and names all other group members as rejecting him), he turns out to be operating at a chance level. He gets no "credit" for having estimated that all members dislike him. This appears to be a critical weakness in the matching model. At the present time an effort is being made to build into the model provision for taking account of a subject's accuracy in judging the sheer volume of choice and rejection directed toward him.

It should be noted immediately, however, that the "matching model solution" to the problem of perceptual accuracy has certain real uses when one applies the method to a comparison of the differences in perceptual accuracy to be found in different groups. It is only with respect to an assessment of individual accuracy that the problem of guessing the volumen of choices and rejections becomes serious.

A technical report of this work by Mostoller and Tagiuri is forthcoming.

3. The relations of dyadic forms and affective intensity. (Tagiuri and Rosborough)

Analysis of dyads by relational analysis has led to certain critical problems of interpretation. We have raised the question, for example, whether a subject who chooses and feels chosen by Other, has a more intense relationship with Other, than does a subject who chooses but does not feel chosen in return. In general we have been concerned to test whether the affective intensity of a relationship increases as its form approaches mutuality of choice and guess (↑↓, ←→) or rejection and guess (↑↓, ↗↖).

We have conducted a study to test:

- (a) whether Relational Analysis diads differ systematically in affective intensity, and
- (b) whether, when ordered in terms of affective intensity, the diads fall in a predicted sequence, according to the general hypothesis stated above.

A criterion measure of intensity of relationship was obtained by asking each member:

- (a) to rank the others in order of preference, and
- (b) to estimate what preference rank he would receive from each of the others.

In addition, Relational Analysis measures were obtained where, as usual, subjects were allowed to make as many choices, rejections, guesses and guesses of rejection as they wished. Thus it was possible to investigate the correspondence between (a) the preference rank given by a subject to another person and (b) the subject's choice, omission or rejection of another, and his perceptions of another's responses toward him. That is to say, we examined the mean rank accompanying each set of possible responses given by a Subject to an Other.

Our results indicate that preference rankings show a systematic relationship to combinations of choice and guess. First, as might be expected, it was found that preference ranking has a close relationship to whether a given individual chooses, rejects, or omits another subject. That is to say - and the point is anything but startling - one ranks others higher* if he chooses them (2.8) than if he omits them (5.6) or rejects them (8.1). The relationship holds for the full range: the affective ranking given to people one omits is higher than that for people one rejects. The finding, while banal, does lend the support of internal consistency to the significance of choice, omission, and rejection in the Relational Analysis procedure.

Now let us ask about the relation between S's preference ranking of others and the manner in which others are seen as responding to S. Does one tend to rank higher in preference those people one perceives as choosing than those people who are perceived as omitting him, and the latter higher than those who are perceived as rejecting him? Again, the data provide an affirmative answer. The mean preference rank you give members seen as choosing you is higher (3.8) than the rank given to those seen as omitting you (5.6), the latter being, again, higher than the rank given to those perceived as rejecting you (7.3). One can see, then, that both people chosen and

* Highest rank: one; lowest, nine. N = 10.

people rejected have more extreme ranks than people one sees as choosing or rejecting oneself. But those with the most extreme ranks are the ones both chosen by you and seen as choosing you and those whom one rejects and perceives as rejecting.

Going on now to the hypothesis that the affective value of a dyad depends upon the degree of mutual response and perception present, we combined the affective rank and perceived affective rank of the members of all dyad combinations and compared those values with mutuality present in the dyad. The hypothesis that the affective intensity of a dyad increases (positively or negatively) as it approaches mutuality of response and perception was confirmed with very high reliability. The order of combined affective ranks corresponded without reversals to the degree of dyad mutuality.

A technical report on this research is in preparation.

B. Extensions of Relational Analysis

1. Salzburg Relational Analysis (Bruner and Tagiuri)

In previous reports we emphasized the importance of considering both preference and perception of preference between members of a dyad. We have now taken into consideration that not only is the dyad critical but also the manner in which each member of the group perceives the relationships between all the other members of a group. Not only does John have a certain preference for Bill and perceives Bill as having a certain preference for him; he also perceives preferences and choices between Bill and all the other members of the group. His relationship to Bill will be conditioned by his perception of Bill's relationship to the rest of the group. This is, of course, a common-sense truism. The task is to represent in a systematic way the network of choices and perceptions in a group as they exist and also how these appear to each member of the group.

To accomplish this, we have evolved a procedure based upon four questions put to each member of a group:

- a. Which members of the group do you prefer (and/or dislike) most?
- b. Which members of the group do you feel profers (and/or dislikes) you most?
- c. Which members do you think M_1 prefers (and/or dislikes) most?
(to be asked for each other member of the group)
- d. By which members do you think M_1 feels most professed (and/or disliked)?
(to be asked for each other member of the group)

These four questions provide the material for plotting the relational pattern within the group and also the perception of this

pattern as it appears to each member (i.e., who member M_i sees as preferring whom and sees as being preferred by whom).^{*} We have called this technique "Salzburg Relational Analysis" since it was used for the first time by a member of the Project in a study of a group at the Salzburg Seminar in the Summer of 1952.

The following measures can be derived from Salzburg Relational Analysis (SRA), some of them being conventional sociometric measures, some conventional Relational Analysis measures, and some of them being unique to SRA.

In general, any group member can be characterized in terms of his responses to others (choices, omissions, and rejections), the responses he receives from others, his own perception of the responses of others to him, and finally his perception of the responses given by group members to each other. Indices based on these responses we shall designate as follows:

1. Response output. The number of choices, omissions, and rejections given others by any specific member.
2. Response income. Number and type of responses received by an individual from others.
3. Perception of own response income. Number and types of responses that a subject perceives as being directed toward him.
4. Apparent "popularity." The number and type of responses believed by other members of the group to be directed toward a particular subject.
5. Apparent "Expansiveness." The number and type of responses believed by members of the group to be given by the subject to them.
6. Apparent "confidence." Number and type of responses that other members of the group believe the subject thinks he is getting.
7. Perceptual accuracy with respect to self. Degree to which the subject is correct in identifying the responses that others direct toward him. There are two measures that can be used here: a volume measure and a specific measure. The first is the degree to which the subject's estimate of his income corresponds to the volume of income received. The second is whether he is correct in identifying the specific individuals who choose, omit, or reject him.
8. Perceptual accuracy with respect to others. Degree to which a subject is able to recognize correctly who in the group chooses,

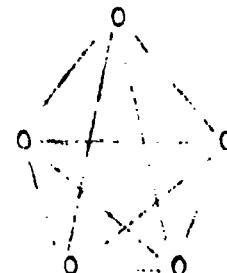
* It goes without saying that wherever the word "prefer" is used, one inquires about "rejection" as indicated in the four questions. It is, of course, possible and often desirable to use a more specific question than one about general preference or rejection.

rejections and guesses whom. Again, this measure can be stated in terms of volume or in terms of specific correctness.

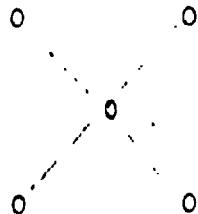
9. Perceptual accuracy with respect to group as a whole. Any group has a certain distribution of dyad types (characterizing mutual choices and perceptions of choices). The degree of correspondence between the actual dyad distribution in the group and a specific member's conception of this distribution is a measure of a particular member's accuracy in perceiving the group structure.
10. Transparency. The degree to which a subject's responses and perceptions are estimated correctly by the other members of the group. A transparent subject is one whose responses and perceptions are estimated correctly by the other members of the group. A transparent subject is one whose responses and perceptions are clear to the other members of the group.

In addition to the individual measures specified above, it is also possible by the use of Salzburg Relational Analysis to describe certain characteristics of a group as a whole. These include the following:

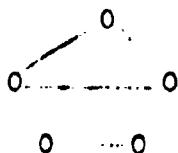
11. General status of the individual in the group. Response output, response income, perception of own response income, apparent expansiveness, and apparent confidence, all characterizing any individual, can be described in terms of the sociometric status of those with whom the subject is involved. For example, response output may be restricted to the "stars" in a group, or the individual may be perceived as very popular only by the least popular members of the group. We refer to the array of such specifications as the "general status" of the individual within the groups; a set of measures comprising several indices as indicated above.
12. Group connectedness. This measure specifies the manner in which the members of a group are joined by responses to each other; that is to say, the way in which choices and rejections are distributed over the group. A completely connected group network of five members, where the relationship of choice is represented by connecting lines, is the following:



One form of partially connected group network is represented by the next example of a five-man group:



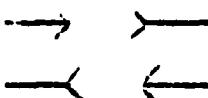
A form of disconnectedness leading to clique behavior is represented by a final example:



Connectedness, of course, can be further specified in terms of "fullness" of the relationship characterizing a particular network. In any of the preceding three diagrams, the joined diads may be of the order of:



Or, they may be more fully developed diads of the order of:



When the frequencies of diads in a group concentrate in the categories $\rightarrow \leftarrow$ and $\leftarrow \rightarrow$ the group is said to be highly integrated, positively and negatively respectively.

13. Apparent group connectedness. Since each group member in the Salzburg meeting indicates what he thinks to be the responses and perceptions of each other member of the group, it is possible to construct his version of what the connectedness of the group is. This, if you will, provides a "subjective" measure of the group connectedness as given by each participating member of the group.

At the present time an effort is being made to gather data appropriate to Salzburg Relational Analysis as well as material that will provide independent variables against which the indices mentioned above may be correlated.

A technical report is in progress.

C. Relation of affect and the perception of affect. (Tagiuri and Blake)

An analysis of the accuracy of perceiving choice, rejection, and indifference in others was carried out on several groups. The object of this study was to determine whether accuracy of perception was related to one's own feelings toward another.

The study was done by the use of Monte Carlo methods. In order to determine whether perceptual accuracy was greater than might be expected by chance, robot groups of the same size as those studied were constructed, with each robot being assigned the same frequency of choices, rejections, and guesses as a particular member of the group being analyzed. These choices, rejections, and guesses were then directed toward other members of the group by the use of a table of random numbers. From such random assignment within a robot group, one is able to determine empirically what the chance expectancy would be of an individual perceiving correctly that another member would choose him or reject him. While the method is not elegant, it is at least apposite to the problem (where the matching model, previously discussed, is not).

The following results emerged. In the first place, accuracy of perceiving indifference, of perceiving choice, and of perceiving rejection is in each case in excess of chance. People do better than chance in spotting the people who choose them, are indifferent to them, and who reject them. Perception of choice by others tends to be more accurate than either perception of indifference or rejection.

The second finding has to do with the tendency to perceive others in a manner in congruence with one's feelings toward them and, momentarily, side-steps the question of accuracy. There is a reliable tendency to perceive others as choosing you if you choose them - regardless now of correctness. There are also tendencies to perceive those toward whom one feels indifference as feeling indifferent toward one. Finally, and by way of a protective mechanism, when one rejects another there is a tendency to see the rejected person as either rejecting or being indifferent toward one.

By way of accuracy, now, where one chooses another there is a great- or chance of perceiving correctly that he chooses one. Under those conditions, one's accuracy of perceiving another's indifference or rejection is closer to chance. In the case where the perceiver feels indifferent toward another, his perceptions of another's indifference or rejection tends to be more accurate (i.e., above chance) than his perception of another's choice. Finally, when one rejects another one maximizes the likelihood of accurate perception of the other's rejection of you. When one rejects another, accuracy of perception of another's indifference is somewhat above chance, but perception of choice is less than one would expect by chance.

III. Substantivo Studios

A. The relationship between status and perception in a group. (Tagiuri and Long)

Several sociometric studies have shown that group members tend to choose others who have a similar status in the group (where status is defined as popularity or number of choices received). The present study addresses itself to an analogous question. Faced with the task of guessing who likes them, do group members tend to guess those of a similar popularity or status?

In order to investigate this question, a study by the use of Relational Analysis was carried out on 96 boys (ages 15 to 18) at a private boarding school. The criterion questions were concerned with the choice of a roommate and guessing who would choose one as a roommate. The results indicate that:

1. Individuals tend to guess that they will be chosen by others who have a status similar to that of the guesser, and, as had been found earlier, to choose others of similar status.
2. There is an even greater similarity of status between guesser and guessed than between chooser and chosen.
3. Among individuals of below average and of average status, choices tend to be directed toward higher status individuals than guesses are. Those of above average status tend to allocate both choices and guesses to people of the same level (i.e. their own level).

The implication of these results may be stated as follows: First, guesses about who chooses one in a group tend to be "socially realistic," i.e., tend to be restricted to like status individuals. Second, guesses tend to be more conservative than choices at status levels below the top level of a group. Whereas one chooses those above one, one guesses in conformity with one's own status. Perhaps choosing represents an expression of level of social aspiration where guessing is more geared to level of social expectation.

A paper based on these results is in preparation.

B. Learning to perceive choices and rejections. (Bruner and Tagiuri)

Do people become more accurate in estimating who chooses them and who rejects them in a group with increased contact over time? To investigate this question in a preliminary way, Relational Analysis data were collected from a discussion group over a series of twelve meetings. The discussion group met weekly for an hour to discuss general problems of adjustment with a psychiatrist and in many ways were similar to a group in a group therapy situation save that its members were normal adults who voluntarily joined the group as an educational enterprise. The group consisted of nine members.

As indicated in a previous section in the discussion of methods of estimating "chance" levels of accuracy of perception, there are several serious problems involved in the analysis of such data. First, one must ask whether each individual member of the group becomes more accurate in estimating the number of group members who choose and reject him. This we shall refer to as the volumo of affective income. If a highly rejected individual begins by estimating that everybody chooses him and, over time, comes to the position of estimating that nobody chooses him but that one person rejects him (and he indicates a person who actually does not reject him) he is becoming more accurate in estimating the affective atmosphere in the group. But note that in the beginning, he perceived nobody correctly in terms of whether they chose him, ignored him, or rejected him; and at the end, let us say, he was also completely incorrect in specifying the actual individuals who ignored and rejected him. In spite of the lack of improvement in ability to spot individuals correctly in terms of their feelings toward him, his perception of the volumo of affect directed toward him improved.

In sum then, there are two measures of accurate perception: accuracy in perceiving volume of affect, and accuracy in perceiving the feelings that specific group members have toward one.

We are currently engaged in analyzing these data and preliminary results show that accuracy of perceiving the volume of affect in a group improves with continued exposure. Thus far, however, it has not been possible to say whether improvement in perceiving individuals accurately is greater than might be expected by chance. An adequate statistical model is not yet available. What we can say is that, given greater accuracy in estimating the volume of acceptance, rejection, and indifference in a group, the increase in specific accuracy seems to be no better than what one would expect by chance. This latter conclusion, to be sure, cannot be taken seriously until the appropriate method of computing chance accuracy can be worked out, a task on which Tagiuri and Mostellar are now at work.

When the mathematical solution is clear, a paper will be prepared. If the solution is not forthcoming, a paper will be prepared on the improvement of perception of affective volume, merely indicating the nature of the problem of specific accuracy.

C. Age and sex trends in Relational Analysis data. (Tagiuri)

Relational Analysis data were collected on a series of groups of subjects ranging in age from about nine to fifteen years. Within this series of groups the criterion used were all related to choice of cabin mate. Analysis of age and sex differences revealed the following:

Choices. The mean number of choices increases with age. The older girls (15 years of age and above) make more choices than the boys of comparable age.

Rejections. The mean number of rejections decreases with age. The older girls make fewer rejections than boys.

Guesses of choice. The mean number of guesses made by the subjects increases slightly with age. Sex differences are unclear.

Guesses of rejection. The mean number of guesses of rejection decreases with age. The older girls make fewer such guesses than the boys.

Whatever the cause, it appears then that the expression of feelings, as it is tapped by Relational Analysis, changes with age. Within cabins, the ratio of Choice to Rejection increases. In the youngest groups choices and rejections are expressed with about equal frequency. In the older groups, choices exceed rejections at the rate of about 2.5:1 for the boys and 4:1 for the girls. The ratio of choices to guesses increases with age in both sexes, indicating the emergence with puberty and early adolescence of a certain modesty or apprehensiveness over being liked. Similar trends obtain between rejection and perception of rejection, the ratio of rejections to guesses of rejection increasing with age. For the girls, however, the ratio of rejections to guesses of rejection is on the average smaller than for the boys. One interpretation of these data is, perhaps, that the girls show more concern with aggression in others (as indicated by the equality of rejections and guesses of rejections). On the other hand, girls show a smaller volume of rejections with age held constant.

Diadic form. Diads containing all positive bonds increase with age for both sexes, especially for girls.

Diads containing all negative bonds decrease for both sexes, especially for girls, where, in the older groups they reach very low frequencies.

Cases in which there is intra-subject mixture of affect (e.g. rejection and guess of choice, or vice versa) decrease with age.

The overall impression is that with age, the children express and perceive progressively more positive feelings and fewer negative ones. They also seem to become less certain of being reciprocated in their positive responses.

D. Studies of the relationship between intelligence and abilities involved in assessing the affect of other group members. (Tagiuri and Bruner)

Both Salzburg Relational Analysis data and GCT scores have been obtained from Navy groups at a C.I.C. School. Studies are in progress on the relationship between measured intelligence and whatever social intelligence is required to be accurate on the SRA tasks. This study is now in progress.

E. Studies in progress on utilization of cues in perceiving affect in others. (Tagiuri and Bruner)

Studies of various types, employing different techniques have been in progress to inquire into what cues are utilized in perceiving affect.

We have interviewed individually members of groups on whom data was available, inquiring about the cues used to arrive at the guesses made by the members. Since feeling and perception of feeling were found to be so importantly related to each other, it became necessary to inquire into the characteristics of the other person that subjects liked, as well as the characteristics of people who were seen as liking the subject. Qualitative analysis on these data is about finished and a report will be issued shortly.

Relationships between one's self-image and one's image of people who are sympathetic and antipathetic has been studied by means of adjective lists. It appears that subjects portray others they like and others they feel liked by on the basis of similarity between them and their own self-image. They conceive of those they dislike and feel disliked by on the basis of contrast with their own self-image. Research on these topics is continuing.

In connection with the study of cues to the perception of affect we are also studying how personalities are typed. Here we are using a number of techniques. We are interested in finding out on what dimensions of personality laymen organize their perception of people. What typologies do laymen employ? This part of the program is diffuse, and we are exploring at the present time. We have prepared special trait-lists that attempt to describe certain major dimensions of personality, and plan to ask subjects to indicate what dimensions they consider to be correlated in people. In theory, it should be possible to compare trait clusters derived phenomenologically in this way with the clusters found in studies (e.g. Cattell's) of "real" personality. It is hoped that such analysis will yield much needed hints for further study as to how personality is perceived.

F. Bibliographical studies (Tagiuri)

An analysis of the literature is being prepared in the area of the perception and judgments of emotion and personality.

G. The role of authoritarianism in the perception and evaluation of a prospective leader. (E.E.Jones)

Psychologists have long been aware of the "personal equation" as it applies to the rating of others and the formation of impressions about their personalities. Individuals differ in their assessment of others, and a considerable body of literature in the twenties and thirties was designed to discover the personality factors in the perceiver which promote valid judgments of others. Under the impetus of Gestalt psychology and the realization that criteria of validity or accuracy are inevitably relative and ambiguous, the

pendulum has recently swung toward a concern with the organization of information about the stimulus person - treating individual differences in the organizers as error variance. In recent years, the attention of perception and cognition students has been drawn to the adaptive function of cognitive processes. The needs and expectancies of the perceiver have been shown to exert influence in the selection, organization and utilization of stimulus information. Underlying perceptual styles and cognitive attitudes which are closely related to the personality structure of the perceiver have also come in for their share of attention as determinants in the perceptual process. The present study attempts to extend and inter-relate these lines of development. We assume that impression formation - or the cognition of others - is a function of need-related expectancies in the perceiver, as well as the attributes of the stimulus person which relate to these expectancies. The purpose of the present experiment is to demonstrate the systematic role of a major variable of personality in the creation of individual differences in impression formation.

The experiment itself involves the presentation of systematically varied stimulus information to two different subject groups varying in the pattern of personality traits known as authoritarianism. Authoritarianism was measured by the 30-item F scale, developed and validated by Adorno, et al. (The Authoritarian Personality) as an indirect measure of anti-democratic character structure. High and low scorers were selected from the upper and lower quartiles of a distribution of F Scale scores made by Navy recruits. In all, 195 subjects participated in the experiment proper, 160 of those providing the data for the major statistical analysis. Groups composed equally of Highs and Lows were presented with information about a recruit platoon leader by means of a mock interview recorded and played to the subjects. They were then asked to rate him - the stimulus person (SP) - on a thirty-trait rating scale. The information presented was varied along two dimensions thought to be of relevance for maximizing differences in the orientation of the subjects: a dimension of personal power and a dimension of leadership attitude. A given group heard either a Forceful or Passive SP being interviewed and then heard the SP describe his leadership attitude in Autocratic or Democratic terms. As a control on sequence, for some of the groups leadership attitude information was presented first. Also, some of the groups made an intervening rating after the first "package" of information, while others made only one (final) rating after hearing both power and leadership attitude information. In summary, the design includes groups run under the following stimulus conditions. Each group was composed of 16 subjects, 8 High and 8 Low Authoritarians.

1. & 2. F-- the "forceful SP", initial rating. (n=32)

1. F/A-- the "forceful autocrat" after an intervening rating of forceful along. (n=16)
2. F/D-- the "forceful democrat" after an intervening rating of forceful along. (n=16)

3. FA-- the "forceful autocrat", power presented first, single terminal rating. (n=16)
4. FD-- the "forceful democrat", power presented first, single terminal rating. (n=16)
5. & 6. P-- the "passive SP", initial rating. (n=32)
5. P/A-- the "passive autocrat" after an intervening rating of passive alone (n=16)
6. P/D-- the "passive democrat" after an intervening rating of passive alone. (n=16)
7. PA-- the "passive autocrat", power presented first, single terminal rating. (n=16)
8. PD-- the "passive democrat", power presented first, single terminal rating. (n=16)
9. A-- the "autocratic SP", initial rating (n=16)
9. A/P-- the "autocratic, passive SP" after an intervening rating of autocrat alone (n=16)
10. D-- the "democratic SP", initial rating (n=16)
10. D/P-- the "democratic, passive SP" after an intervening rating of democrat alone (n=16)

In order to simplify statistical treatment, traits in the rating scale were combined to provide summary indexes or a priori clusters representing different aspects of the subject's impression: a power cluster (including forceful, assertive, ambitious, independent, power conscious, firm, and gets things done), a social sensitivity cluster (including generous, democratic, warm, and sensitive to others) a flattery cluster (including popular, generous, warm, good sense of humor, modest, dependable, uses his head, and gets things done) and a leadership evaluation cluster (democratic, dependable, uses his head, assertive, natural leader, good officer, and enjoy working under him).

The results were analyzed by three procedures. The major statistical technique was the analysis of variance, assessing the importance of each independent variable as a source of variance in the determination of scores on the a priori clusters. In addition, tetrachoric correlations were computed for each trait correlating with each other trait under the Forceful SP and Passive SP conditions for High and Low Authoritarians. Finally, free response comments made by each subject were content analyzed.

The results clearly demonstrate the validity of the general hypothesis underlying this research: authoritarianism does play a systematic role in the formation of first impressions. This is not to say,

however, that the specific nature of this role is explicitly predicted by authoritarian personality theory. Nine hypotheses were proposed prior to data analysis, drawn from authoritarian personality theory and consistent with current "motivational" theories of social perception. Although some of these hypotheses were supported by the results, many of them are inadequate statements of the subject-stimulus relationships in the present experiment. There follows a summary of the findings related to these hypotheses.

1. High Authoritarians show neither a tendency towards (a) accentuating the attributed powerfulness of both Forceful and Passive SPs, nor (b) maximizing the powerfulness of the Forceful SP and the weakness of the Passive SP, as predicted. In fact, the Low Authoritarians see the Forceful SP as more powerful and the Passive SP as less powerful than the High Authoritarians to a significant extent. This appears to be a function of the relative sensitivity of the Lows to personal, or internal power cues, whereas the Highs are more inclined to differentiate on the grounds of the external cues of institutional status. Both groups, however, see the Forceful SP as significantly more powerful than the Passive SP, a fact which gives operational anchorage to the intended stimulus difference.
2. Regardless of authoritarianism, some appearance of energy, forcefulness and purpose in the SP serves as a pre-condition for favorable judgment. In the evaluation of leadership ability, the personal power of the SP is heavily weighted by both High and Low Authoritarians, whereas the SP's explicitly stated attitudes about leadership contribute little to the evaluation if presented alone. However, when leadership attitude information is presented following initial presentation of either Forceful SP or Passive SP information, whether the SP is Autocratic or Democratic takes on differential significance for High and Low Authoritarians. The Highs evaluate the Autocrat (whether Forceful or Passive) more positively, whereas the Lows evaluate the Democrat (whether Forceful or Passive) more positively. This offers support for authoritarian personality theory, and suggests that statements are evaluated differently when embedded in a context of information about their source than when presented in isolated form - even when the specific nature of this context varies.
3. High Authoritarians tend to be more accepting and less critical in their ratings than Low Authoritarians. This was predicted on the grounds that there would be greater inhibition of aggression (and/or more facilitative distortion) in the High Authoritarians vis a vis a leadership figure.
4. Whether or not the subjects made intervening and final ratings or simply final ratings was not important in the present experiment, nor did Highs differ from Lows in this respect - as one might have expected by inference from the dynamics of stereotyping in authoritarians.

5. High and Low Authoritarians differ in their organization of an impression as measured by differences in the intercorrelation of traits, but organization is also highly dependent on the nature of the stimulus material presented. The nature of this difference in "organizational bias" is difficult to specify. The Lows seem to evaluate leadership on the basis of many different personal and performance qualities, while the Highs make a clear distinction between the merit of the SP as a leader and his worth as a person. As a consequence - and in contradiction to our pre-experimental hypothesis - the Lows demonstrate a more pervasive "halo-effect" than the Highs, but at the same time are more sensitive to the stimulus cues presented and generally more critical of the SP.

The implications of this research are both theoretical and practical. It is clear that there are consistent individual differences in first impression formation, and that the needs and personality structure of the perceiver condition his rating responses when he is confronted with information relevant to those needs. Practically speaking, the results of this research indicate that the values and personality traits of followers are important determinants of their acceptance and rejection of leaders expressing different attitudes. However, regardless of the degree of authoritarianism in the follower, energy, assertiveness and the other attributes of personal forcefulness are clearly appreciated as leadership qualities and tend to promote the follower's respect and admiration.

H. Proposed investigation of the role of value orientation in the formation of first impressions. (Bruner, Jones, Edgo and Tagiuri)

One of the distinguishing features of the perception of people as compared with the perception of non-social objects (including psycho-physical attributes), is the intrinsic fusion of discrimination and judgment, or description and interpretation, in the resulting impression. McGinnies (J. Abn. & Soc. Psychol., 1950, 45, 25-36), Postman, Bruner and McGinnies (J. Abn. & Soc. Psychol., 1948, 43, 142-154), Haigh and Fisko (J. Abn. & Soc. Psychol., 1952, 47, 394-399) and others have shown that personal values play a role in perceptual and cognitive processes. The perception of people (and the impressions we form on the basis of information from or about them) is presumably even more highly influenced by the pattern of values of the perceiver. Such heightened influence is predicted as a consequence of the complexity and the goal-relevance of other persons as stimuli.

A study is in progress to examine several aspects of impression formation, relating to the interaction between dominant values in the perceiver and the expressed values of the person being judged. Although certain general hypotheses underlie the research, the design is primarily exploratory. As yet we are too conceptually impoverished with regard to "cognition of the social" to make predictions except of the grossest sort, and with a low level of confidence.

The procedure that we have in mind involves the cooperation of approximately 100 students in an experiment on "personality assessment." Each student is presented with a list of 50 traits - composed of three positive and three negative qualities related to each of the six Spranger value types, and 14 additional traits of general interest. As an example, a positive trait referring to the "religious type" might be "sincere," while a negative trait might be "superstitious" or "suggestible."

With these lists in front of them, the subjects are then told to check the twenty traits that they deem most important or most sensitive and informative in the description of other people. (Perhaps greater refinement may be introduced in this measure of "salience" of personality dimension depending on pre-test results).

With this as a preliminary, the major part of the experiment involves the rating of six different people on the same 50 traits. The stimulus persons are presented in mimeographed thumb-nail sketches. Each of them represents one of the six Spranger value types; i.e., there are sketches describing a political man, an economic man, a social man, a theoretical man, a religious man, and an aesthetic man. Subject first writes a free sketch of the person presented. Then, some variant of the following rating procedure will be followed (again depending on indications of feasibility in the pre-test). Subjects will be told to think of one stimulus person at a time, and to indicate those three traits which are most and those three traits which are least characteristic of him. Then, excluding those six traits, he indicates the six next most and the six next least characteristic qualities. Finally, he orders the remaining 22 traits into characteristic and non-characteristic halves. Such a procedure will result in a normalized distribution of trait ratings suitable for using the correlational method of Stephenson's Q-technique. At the end of the experiment, each subject will fill out an Allport-Vernon-Lindzey Study of Values so that his own dominant values may be determined.

In the analysis of data, we hope to be able to compare subjects with different value orientations in their description of persons with similar and differentially dissimilar values. The following measures seem relevant to such a comparison:

- (1) Comparing the frequency with which given traits are initially checked as most useful and informative in the description of others (in general) by groups of subjects with different value orientations. This will provide information on (a) the tendency of various groups of subjects to map out negative versus positive features of the social terrain and (b) the specific dimensions of information which the subject groups deem most salient and important.
- (2) The design of the experiment involves impressions by six types of subjects, rating and describing six types of stimulus persons. Within each of the 36 cells in the resulting matrix, each of the 50 traits will have a mean value on the scale from

most characteristic. Thus it will be possible to correlate the rating means in any given coll with the means in any other coll. In this way certain general statements may be made, such as: the political man and the economic man receive the esthetic man from the same general perspective (i.e., organize descriptive traits in the same way) but differ in their perception of the social man.

(3) Since half of the traits are positive and half are negative in evaluative term, it will be possible to compare subject groups in their employment of positive and negative traits both in general and with regard to each of the six stimulus persons. Statements of general and specific acceptance and rejection can thus be derived.

I. Personality Correlates of Sociometric Choice and Rejection (Lindzey)

The nature and extent of relationship between various personality factors and the status of the person in a group has been studied by Dr. Gardner Lindzey and several student assistants. Lindzey and Smolsor studied the sociometric choices and rejection patterns in several dormitories of a small college and also administered the following personality measures: Rosenzweig P-F Test, Allport-Vernon-Lindzey Study of Values, Thematic Apperception Test, and a battery of personality rating and attitude scales.

The results of this inquiry have been, or will be reported in various places. Lindzey and Borgatta ("Sociometric Measurement" Chapter 12 in Handbook of Social Psychology, ed. by Gardner Lindzey, in preparation) reports Smolsor's unpublished finding that attitudinal position was related to social status in separate dormitories, but not for the college taken as a whole. Smolsor concluded that "there were separate norms or social climates that operated within each dormitory and that these were much more important in determining social status than any college-wide norm." He also found that cliques were generally homogeneous in attitude structure.

Lindzey and Goldwyn ("The Validity of the P-F Study," manuscript to be submitted for publication in 1953) found generally low correlations, some of which attained statistical significance between P-F variables and social status. Comparison of extremely high and low status individuals indicated that the former were more intrapunitive, less extrapunitive, and had lower group conformity ratings. Ratings on anxiety and aggression derived from the Thematic Apperception Test were not related to social status.

Further exploration of the relationship of status and personality characteristics is now in progress, employing a more carefully controlled design and some additional measuring instruments. Preliminary results will probably become available during the summer of 1953.